

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

EUGENE S. DUDASH ET AL.

Group Art Unit: Unknown

Examiner: Unknown

Divisional of U.S. Patent Application

Serial No.: 09/014,875

Filed: January 28, 1998

For: MOTOR VEHICLE SEAT

Attorney Docket No.: LEAR 0847 PUS

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
United States Patent and Trademark Office  
Washington, D.C. 20231

Sir:

Please amend the above-identified application as follows:

**In The Title**

Please change the title to read --ATTACHMENT OF HEAD REST GUIDE  
TUBE TO VEHICLE SEAT FRAME--.

**In The Specification**

*Please replace the Specification paragraph on page 1, lines 3-5 as shown below:*

The invention relates to a method of attaching a head rest guide tube to a seat  
back frame, and to an assembly produced by the method.

*Please replace the Specification paragraph on page 1, lines 19-27 as shown below:*

The prior art bent tubes are deformed in the upper bending corners and have thin walls in the attachment areas, which results in a high shear stress. The thin attachment areas require a splint or insert to be inserted therein to reduce the shear stress. Furthermore, for attachment of the head rest guide tubes, apertures must be bored through both sides of the back frame tube, which may be awkward and may unnecessarily increase manufacturing costs. A prior method for securing the head rest guide tubes to the back frame includes welding the head rest guide tubes to the back frame.

*Please replace the Specification paragraphs beginning on page 2, lines 7-29 and continuing to page 3, lines 1-26 as shown below:*

Under the invention, a method is provided for attaching a head rest guide tube to a seat back frame including a substantially flat section having opposing sides with an aperture formed therethrough. The method includes inserting the guide tube into the aperture, and swaging the guide tube over the flat section, whereby to secure the guide tube within the aperture.

Further under the invention, a method of attaching a head rest guide tube to a seat back frame having an aperture extending therethrough includes inserting the guide tube into the aperture, and swaging the guide tube to form a swaged portion engaged with the seat back frame to thereby secure the guide tube to the seat back frame.

Advantageously, under the method of the invention, the guide tube may be attached to the seat back frame without welding.

The method described above may also include swaging the guide tube to form an additional swaged portion on the guide tube, wherein the additional swaged portion cooperates with the swaged portion to secure the guide tube to the seat back frame.

Furthermore, the step of swaging the guide tube to form an additional swaged portion may be performed prior to the step of inserting the guide tube into the aperture.

Further under the invention, a vehicle seat assembly includes a seat back frame having an aperture extending therethrough, and a headrest guide tube disposed in the aperture. The guide tube has first and second radially extending swaged portions engaged with the seat back frame for securing the guide tube to the seat back frame.

These and other objects, features, and advantages of the present invention are readily apparent from the following detailed description of the best modes for carrying out the invention when taken in connection with the accompanying drawings.

### **In The Claims**

Please delete claims 1-12 and add new claims 14-21 as shown below:

14. A method of attaching a head rest guide tube to a seat back frame having an aperture extending therethrough, the method comprising:

inserting the guide tube into the aperture; and

swaging the guide tube to form a swaged portion engaged with the seat back frame to thereby secure the guide tube to the seat back frame.

15. The method of claim 14 further comprising swaging the guide tube to form an additional swaged portion on the guide tube, wherein the additional swaged portion cooperates with the swaged portion to secure the guide tube to the seat back frame.

16. The method of claim 15 wherein the step of swaging the guide tube to form an additional swaged portion is performed prior to the step of inserting the guide tube into the aperture.

17. A method of attaching a head rest guide tube to a seat back frame having a flat portion, the flat portion having an aperture extending therethrough, the method comprising:

forming a first radially extending swaged portion on the guide tube;

inserting the guide tube into the aperture; and

forming a second radially extending swaged portion on the guide tube such that the flat portion extends between the swaged portions, and such that the swaged portions abut the flat portion to thereby secure the guide tube to the seat back frame.

18. The method of claim 17 wherein the step of forming a first swaged portion is performed prior to the step of inserting the guide tube into the aperture.

19. A vehicle seat assembly comprising:

a seat back frame having an aperture extending therethrough; and

a head rest guide tube disposed in the aperture and having first and second radially extending swaged portions engaged with the seat back frame for securing the guide tube to the seat back frame.

20. The assembly of claim 19 wherein the seat back frame includes a flat portion, and the aperture extends through the flat portion.

21. The assembly of claim 19 wherein the seat back frame includes an additional aperture, and the assembly includes an additional head rest guide tube disposed in the additional aperture, the additional guide tube having first and second radially extending swaged portions engaged with the seat back frame for securing the additional guide tube to the seat back frame.

## **In The Abstract**

*Please replace the Abstract paragraph on page 12, lines 1-12 as shown below:*

A method of attaching a head rest guide tube to a seat back frame having an aperture extending therethrough includes inserting the guide tube into the aperture, and swaging the guide tube to form a swaged portion engaged with the seat back frame to thereby secure the guide tube to the seat back frame.

A marked up version of these changes is attached to this Amendment.


## **Remarks**

Original claims 1-12 have been deleted, and new claims 14-21 have been added. Furthermore, the Disclosure Of The Invention section and the Abstract have been amended to be consistent with the new claims.

Respectfully submitted,

**EUGENE S. DUDASH ET AL.**

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE  
THE SPECIFICATION**

*Please replace the Specification paragraph on page 1, lines 3-5 as shown below.*

[The present invention relates generally to motor vehicle seats, and more particularly to a seat back frame] The invention relates to a method of attaching a head rest guide tube to a seat back frame, and to an assembly produced by the method.

*Please replace the Specification paragraphs on page 1, lines 19-27 and continuing to page 2, lines 1-5 as shown below:*

The prior art bent tubes are deformed in the upper bending corners and have thin walls in the attachment areas, which results in a high shear stress. The thin attachment areas require a splint or insert to be inserted therein to reduce the shear stress. Furthermore, for attachment of the head rest guide tubes, apertures must be bored through both sides of the back frame tube, which may be awkward and may unnecessarily increase manufacturing costs. A prior method for securing the head rest guide tubes to the back frame includes welding the head rest guide tubes to the back frame.

[It is desirable to provide a seat assembly in which localized heat treatment is not required prior to bending the seat back frame, heat treatment after frame completion is not rigid, and in which structural integrity is enhanced and manufacturing costs are reduced.]

*Please replace the Specification paragraphs beginning on page 2, lines 7-29 and continuing to page 3, lines 1-26 as shown below:*

[The present invention overcomes the above-referenced shortcomings of prior art seat assemblies by providing a seat back frame in the form of an extruded solid aluminum I-beam which does not require heat treatment for bending, localized heat treatment prior to bending, or post-bending heat treatment.

More specifically, the present invention provides an apparatus for supporting a seat back in a vehicle, comprising an aluminum I-beam formed in a generally U-shaped configuration, and having opposing ends supported with respect to the vehicle. The I-beam forms a seat back frame for supporting a seat back.

The present invention further provides a method of manufacturing a vehicle seat back frame, comprising the following steps: a) extruding an aluminum I-beam comprising a center support positioned between first and second flanges extending the length of the I-beam; b) cutting the I-beam to a desired length; c) age-hardening the I-beam; and d) bending the I-beam into a substantially U-shaped configuration, such that the center support and first and second flanges cooperate to form an inwardly-facing channel and an outwardly-facing channel.

In a preferred embodiment, the assembly includes a cross-member extending across the U-shaped I-beam, with the cross-member attached to the I-beam at opposing ends by a pair of swaged nuts.

The present invention also provides a method for attaching a head rest guide tube to a seat back frame having a substantially flat section with an aperture formed therethrough. The method comprises inserting the guide tube into the aperture and swaging (also termed "swedging") the guide tube on both sides of the flat section whereby to secure the guide tube within the aperture.

Accordingly, an object of the present invention is to provide an aluminum seat back frame which does not require specialized heat treatment for bending.

Another object of the present invention is to provide a vehicle seat back frame with improved structural integrity.

Yet another object of the present invention is to provide a vehicle seat back frame with reduced manufacturing costs.

The above objects and other objects, features, and advantages of the present invention are readily apparent from the following detailed description of the best modes for carrying out the invention when taken in connection with the accompanying drawings.]

Under the invention, a method is provided for attaching a head rest guide tube to a seat back frame including a substantially flat section having opposing sides with an aperture formed therethrough. The method includes inserting the guide tube into the aperture, and swaging the guide tube over the flat section, whereby to secure the guide tube within the aperture.

Further under the invention, a method of attaching a head rest guide tube to a seat back frame having an aperture extending therethrough includes inserting the guide tube into the aperture, and swaging the guide tube to form a swaged portion engaged with the seat back frame to thereby secure the guide tube to the seat back frame.

Advantageously, under the method of the invention, the guide tube may be attached to the seat back frame without welding.

The method described above may also include swaging the guide tube to form an additional swaged portion on the guide tube, wherein the additional swaged portion cooperates with the swaged portion to secure the guide tube to the seat back frame. Furthermore, the step of swaging the guide tube to form an additional swaged portion may be performed prior to the step of inserting the guide tube into the aperture.

Further under the invention, a vehicle seat assembly includes a seat back frame having an aperture extending therethrough, and a headrest guide tube disposed in the aperture. The guide tube has first and second radially extending swaged portions engaged with the seat back frame for securing the guide tube to the seat back frame.



[The above objects] These and other objects, features, and advantages of the present invention are readily apparent from the following detailed description of the best modes for carrying out the invention when taken in connection with the accompanying drawings.

**VERSION WITH MARKINGS TO SHOW CHANGES MADE  
THE ABSTRACT**

[The present invention provides an apparatus for supporting a seat back in a vehicle comprising an aluminum I-beam formed in a generally U-shaped configuration, and having opposing ends supported with respect to the vehicle for forming a seat back frame. Also provided is a method of manufacturing a vehicle seat back frame, comprising: a) extruding an aluminum I-beam; b) cutting the I-beam to a desired length; c) age-hardening the I-beam; and d) bending the I-beam into a substantially U-shaped configuration to form a vehicle seat back frame.] A method of attaching a head rest guide tube to a seat back frame having an aperture extending therethrough includes inserting the guide tube into the aperture, and swaging the guide tube to form a swaged portion engaged with the seat back frame to thereby secure the guide tube to the seat back frame.